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AUTHOR Waldo, Lois J.; And Others
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ABSTRACT

The final report describes the Comprehensive Communication Curriculum (CCC), a 4-year program involving the communication skills of severely and multiply handicapped students with very little spontaneous communication skills. The program was designed to teach the students appropriate easily learned responses for requesting objects and initiating social interactions. The first section describes the CCC program and its application in Kansas. Five program components are discussed: (1) the caregiver interview; (2) identification of wants and needs; (3) request training; (4) initiation of communication; and (5) environmental manipulations to facilitate spontaneous use. Seven case studies illustrate such procedures as systematic reinforcer sampling, diagnostic teaching, requesting more, use of a communication board, and requests through sign language. Part 2 describes the project's family involvement component. Two phases are considered for the teacher in implementing a parent involvement approach: initiating strategies (such as an initial contact letter and followup telephone calls) and ways to continue and increase involvement (such as classroom observation or volunteering). A hierarchy of services for parental participation in the education of their child is charted. The bulk of the document consists of five lengthy appendixes, including examination of the CCC model development and replication, and bibliographies related to the communication curriculum and the family involvement component. (CL)

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Final Report

Grant # G007804911
Handicapped Children's Model Program

A Comprehensive Communication Curriculum for the Education of Severely Multiply Handicapped School Children

Authors

Lois J. Waldo
Susan Vanost Wulz
Diane M. Klein
Maura K. Hall
Stephen P. Myers
Sue Ann Carpenter

Principle Investigator: Ann M. Marshall

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Office of Special Education

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Communication Curriculum Component

Program Overview

All children need basic communication skills: the ability to request wants and needs, and to initiate a communicative interaction. This is especially important for profoundly retarded and multiply handicapped people who are dependent upon others for locomotion, food, clothing, bathing, and social interaction. Effective communication skills may alleviate some of the frustrations caused by physical dependency by providing multiply handicapped children with a means to request things they cannot obtain independently.

The Comprehensive Communication Curriculum (CCC) Program (Klein, et al., 1981) was designed for severely and multiply handicapped students who have very little spontaneous communication. The purpose of this program is to teach these students appropriate responses that they can rapidly learn for requesting objects and initiating social interactions. Prerequisite training is minimized so that the programming can meet the child's immediate communicative needs as soon as possible.

The CCC Program has been used in classrooms for the severely multiply handicapped throughout the state of Kansas. It was developed by speech pathologists, psychologists, and teachers who have been actively involved in training severely handicapped children. Many other resources were also drawn into the development of this program. Especially important were Williams and Fox (1977), Sternberg, Battle, and Hilld (1980), McLean and Snyder-McLean (1978), Horstmeier and MacDonald (1978), Reike, Lynch, and Soltman (1977), and Hart and Risley (1975, 1976, 1977, 1978, 1980).

The purpose of this section is to briefly describe the CCC Program for severely and multiply handicapped students, and to present examples of its application in Kansas. There are five components to this program: (1) The Caregiver Interview, (2) Identification of Wants and Needs, (3) Request Training, (4) Initiating Communication, and (5) Environmental Manipulations to Facilitate Spontaneous Use. These five components of the CCC Program are directed towards the final goal of providing all students with some method of spontaneously initiating communication and indicating what they want (requesting).

The Caregiver Interview

Communication is a social behavior; it occurs as an interaction between people. Therefore, it is obvious that the people who will be best qualified to describe severely handicapped children's communication behavior are those people who interact with them the most. For most children, it is their parents or caregivers that are the best single source of information. It is a basic premise of the CCC Program that communication training must be planned with major input from the children's parents or caregivers. To assist the teacher in using the parents' input in targeting appropriate communication training goals, the Caregiver Interview was adapted from Horstmeir and MacDonald (1978). This may be the most important part of the assessment process with profoundly handicapped children.

Program planning involves two decisions. First, what do students want or need from their environment; that is, what do they communicate about? One function of the Caregiver Interview is to identify those things in the child's home or classroom that may be reinforcers, such as favorite toys,

books, food, activities or people. The second decision of program planning is to determine which responses to train. The Caregiver Interview identified those behaviors the child currently uses to communicate. In conjunction with speech pathology and physical therapy evaluations, this information may be used to pinpoint potential responses for communication training. For example, teachers can probe methods of shaping existing responses (e.g., grabbing) into more appropriate responses (e.g., reaching).

Case Study 1: Sandy

Sandy is a profoundly retarded physically handicapped six-year-old with few communicative behaviors in the classroom. Frequent tantrums had indicated a list of disliked activities but few potential reinforcers. Her teacher went to Sandy's home and interviewed her mother and father using the Caregiver Interview to facilitate the interaction.

Her mother reported that Sandy often smiled when she heard voices she recognized, such as when her father arrived home in the evenings. Sandy also laughed when being tickled or while splashing in the bath. Tantruming (screaming, crying, kicking, etc.) occurred when her parents tried to put on her leg brace, brush her teeth, brush her hair, and sometimes while dressing her. Sandy turned her head away from some foods (e.g., liquids, meat, and vegetables), but smacked her lips and opened her mouth when being fed ice cream and sweet potatoes. She vocalized ("ma") when impatient for another bite of a favorite food or when she wanted more attention.

Thus, her teacher obtained a list of potential reinforcers (ice cream,

sweet potatoes, tickling, and bathing) and responses that could serve to communicate "more" (e.g., opening mouth, laughing/smiling, or vocalizing). These may be components of an effective communication training program for Sandy.

Identification of Wants and Needs

For many children, such as Sandy, the Caregiver Interview provides enough information to begin programming almost immediately. However, some severely handicapped children may exhibit very little communicative behavior at home or at school. For these children, the Caregiver Interview is only one phase of program planning. The CCC Program provides several other procedures for identifying reinforcers for children with few responses or few spontaneous interactions with their environment.

Systematic Reinforcer Sampling

This procedure involves two components: (1) the presentation of an object or activity, and (2) the removal of the object or activity. When children are shown an object or food that they like, they may reach for it, look at it, lean towards it, smile, or request it. All of these behaviors indicate that the object or food may be a reinforcer; the child appears to want it. However, some students respond more intensely when a favorite object or food is taken away. For example, they may cry, tantrum, vocally protest, reach towards the object, or push away the adult that is taking the object or food. These behaviors may indicate that the child doesn't want interaction with the object to end. Thus, it may be a reinforcer.

Identification of Reinforcers via Environmental Manipulation

Many events that are regularly scheduled parts of a student's day may be effective as reinforcers. Identification of reinforcers via environmental manipulation involves modifying a common event in the child's daily schedule or activities to elicit responses that might indicate reinforcers. For example, a student who receives juice every day may not appear to enjoy it (i.e., he may not smile, reach for it, request it, etc.). However, if the juice were to be delayed and given to every other student, the child may tantrum, protest, cry, etc. These behaviors indicate that the juice may be a reinforcer during snacktime when other students are receiving juice. Juice may not be reinforcing in other situations.

Diagnostic Teaching

Sometimes neither systematic reinforcer sampling nor environmental manipulations reveal potential reinforcers for training. This may occur because the student is very physically impaired and has very few ways in which to respond or because interactions with the environment are not reinforcing to the student. In these cases, a diagnostic teaching strategy can be employed. This procedure involves a trial training period. An object or activity that the student might like is selected. A very simple response is shaped to gain access to the selected object or activity. If the child learns the behavior it can be assumed that the object or activity selected is an effective reinforcer for that response.

Case Study #2: Robbie

Robbie is a profoundly impaired child with no known voluntary control of his body. It was not known if he could see or hear, as he never

responded to changes in his environment. During the Caregiver Interview his mother reported that Robbie used to cry during physical therapy exercises; however, he had not done so in many years. She also reported that he sometimes lifted his right hand to his mouth, which she thought could be related to hunger or thirst. Systematic reinforcer sampling was ineffective as Robbie did not respond differentially to any foods, objects, or physical contact.

Thus, Robbie's daily schedule was reviewed in order to design an environmental manipulation that might reveal reinforcers. Every two hours, Robbie was given some juice and his mother indicated that he seemed to swallow his juice easier in late afternoon than in the morning. To establish an environmental manipulation that would indicate if this was reinforcing to Robbie, his teacher omitted his 2:00 juice. When his mother gave him his juice at 4:00, she reported that he drank more juice than usual and he swallowed most of it without difficulty.

Because this was not strong evidence that juice as a reinforcer for Robbie, diagnostic teaching was initiated. Robbie was not given juice at 2:00; it was delayed until 4:00 to increase (if possible) its power as a reinforcer. At 4:00, Robbie's mother gave him a taste of the juice. Then she paused about 5" and lifted his arm before giving him more juice. Lifting his arm was the response selected for indicating that he wanted more juice. After weeks of repetition, his mother reported that Robbie sometimes moved his hand after being given a taste of juice. This indicated that juice might be a reinforcer for this response.

Request Training

The most frequent use of communication by severely handicapped children is that of requesting objects, activities, and people that they want. This communicative function is ideal for training because it permits children to control the important reinforcers in their environment (Guess, Sailor, and Baer, 1978). A functional request response is reinforced by the item that is requested.

One important feature of the CCC Program is that the child is taught a response that can be acquired rapidly. Requesting is a basic function for which the child has an immediate need. Providing the children with functional responses with which to meet this need is more important than teaching them more difficult conventional responses that may take months or years to learn. Thus, the initial request training should utilize responses that are easy to teach the student.

There are four request training objectives in the CCC Program: Requesting More, Requesting through Choice, Requesting through Communication Boards, and Requesting through Speech or Signs. These objectives differ primarily in the response that is trained. This allows the CCC Program to be responsive to the individual capabilities and needs of each student.

Requesting More

Teaching the child to request more of a favored activity or object is the simplest and most basic request objective for two reasons. First, the child needs only one response and virtually any response can signal "more" (e.g., an eye blink, body movement, vocalization, head turn, hand movement, or leg movement). This makes "Requesting More" a particularly appropriate objective for severely physically impaired children.

The second advantage to this objective is that the student actually interacts with the object or activity before indicating "more". Most communicative behaviors require that the child anticipate the event when presented with visual cues (e.g., seeing juice means that a taste of juice is soon forthcoming). The "More" procedure involves letting the student interact with the object, get a taste of the food, or be involved briefly in the activity before requiring the student to request more of it. Thus, the child is first given contact with the reinforcing (or "motivating") attributes of the object or activity, and then taught how to get it again (request more).

Because the teacher presents the stimulus before the child responds, this objective still does not meet the students' needs for spontaneous control of their environment. The teacher sets the occasion for the response by giving a taste of the food, contact with the object, or a sample of the activity. In addition, the teacher selects the object presented to the student for the request. On some days or sessions this object or activity may be less reinforcing than at other times. The student may really prefer something else, but has no method of communicating that except by not responding. Nevertheless, this is the first step in learning that communication can be used to control the environment; it gives the child an opportunity to learn a response that effectively controls the behavior of another person.

Case Study #3: Chad

Chad was a nine-year-old severely multiply handicapped student with severe spastic quadriplegia and poor head control. He was completely nonverbal, nonambulatory, and had no self-help skills. His voluntary responses were extremely limited.

The Caregiver Interview revealed few voluntary responses that could be used for training. Systematic reinforcer sampling indicated no objects or activities to which he responded. An environmental manipulation revealed that Chad sometimes laughed when bounced on a large physical therapy ball, and, when the bouncing was terminated, he occasionally lifted his head towards the teacher and made a short vocalization ("ah").

On this basis, Chad was placed in the "Requesting More" objective. His teacher bounced him vigorously on the physical therapy ball in a sitting position. Once Chad began laughing the teacher stopped bouncing and waited fifteen seconds for Chad to lift his head and say "ah". If Chad vocalized, his teacher immediately resumed bouncing him on the ball. If he failed to respond, his teacher modelled the response three times, waiting for a response each time. If he still didn't respond then Chad was returned to the mat for two minutes.

As shown in Figure 1, Chad reached the training criterion of 80% or better for four out of five days in just 17 training sessions. This was one of the first programs on which Chad had ever met criterion.

(Insert Figure 1 about here)

Generalization training was conducted outside of the classroom by Chad's Foster Grandmother. She bounced him on her knee, and when she stopped, Chad was trained to lift his head and say "ah". Although his responses were again inconsistent, he met the training criterion after 18 sessions, as shown in the second graph on Figure 1.

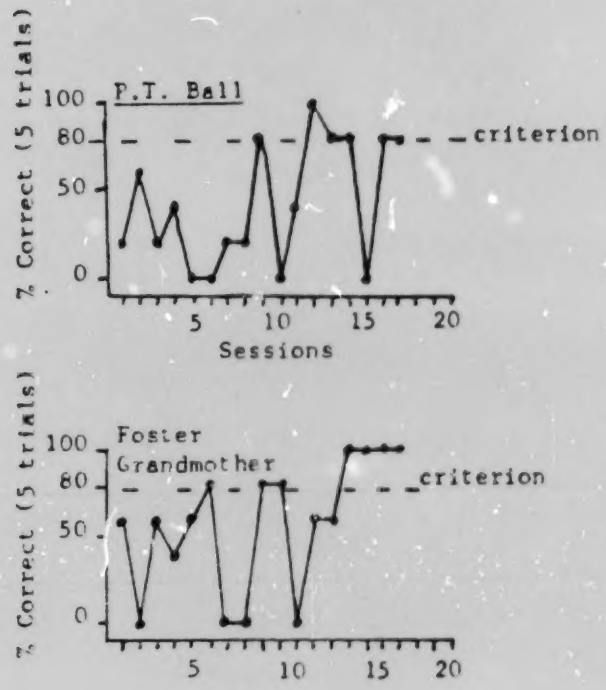

Figure 1. The results of "Requesting More" training conducted with Chad. The top graph shows his results during initial classroom training bouncing on the physical therapy ball; the lower graph shows his results with his Foster Grandmother (generalization).

Requesting Through Choice

In order to make a choice, students must have a "selection response" (Wulz & Hollis, 1979). That is, they must be able to indicate which of two or more items they prefer. This requires students to have a response that can be produced in at least two directions (e.g., looking to the right and left or up and down, tilting the head to the right and left, etc.). A choice response requires at least two movements.

This objective is especially useful because it permits the child to choose to interact with or obtain any item in the environment. For example, a child may learn to choose any toy in the classroom, choose among various foods in the cafeteria, or choose any activity on the playground. The only requirement is that the objects, foods, and activities be visible to both the student and the people who will provide the student access to them.

Case Study #4: Walter

Walter was a profoundly retarded 12-year-old. Although he had received years of training to increase vocalizations and to establish control of his random vocalizations, he was still completely nonverbal.

The Caregiver Interview revealed many reinforcing items and activities for Walter. His history of stealing food from cupboards and other students clearly established that food was an effective reinforcer. However, he usually grabbed items that he wanted, a behavior that both teachers and caregivers found aversive. Thus, the selection response chosen for Walter was pointing (a modification of his existing response).

Walter was taught to request by choice; that is, to point to a preferred item as opposed to a less preferred item in a two-choice array. The

preferred items were juice and cookie; the less preferred items were dish, paper, fork, etc. Walter was given whichever item he selected: if he chose the dish, he was given the dish; if he chose the cookie, he got the cookie. In this way the student is taught to make a discriminative choice by exposure to the natural consequences of selection.

As is shown in Figure 2, Walter's initial responses were somewhat random: he selected both preferred and nonpreferred items. However, by Session 26, he had met the criterion of 80% correct or better for four of five sessions, and his data indicated a clear acquisition curve.

(Insert Figure 2 about here)

Requesting Through Communication Board

Once a child can use some selection response (such as pointing or directed eye gaze) to request items, it is possible to begin communication board training. The advantage of communication board use is that the objects or activities that the child wants to request need not be visible, either to the teacher or the student. This increases the student's control of the environment, because he or she can request activities in other rooms (e.g., drink of water, use of bathroom, watch television, or go outside).

Case Study #5: Jill

Jill was a profoundly retarded adolescent with normal sight and hearing. She had been learning to respond to pictures in the classroom for several months, but generally required a prompt. The purpose of training was to teach her to spontaneously point to pictures to request items that she desired. Training was initiated with her juice at snacktime.

During baseline, the pictures on which she had been trained were placed beside Jill on the table. Her teacher initially reinforced any "request"

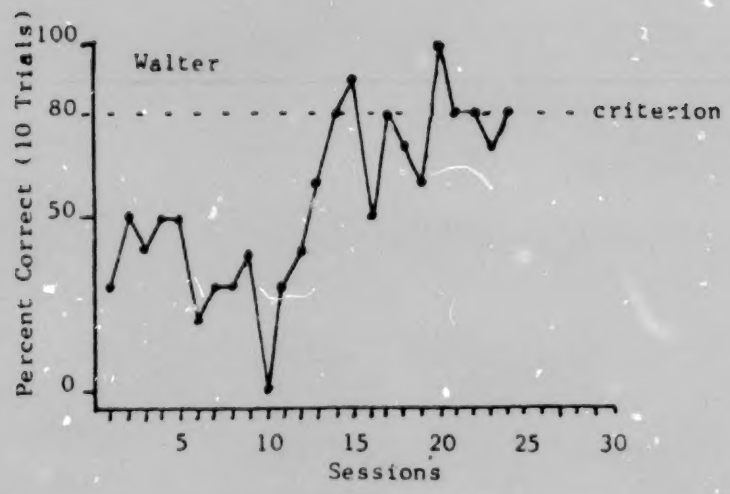

Figure 2. The results of "Requesting Through Choice" training with Walter.

response (e.g., pointing to the juice, tapping her cup against the juice, etc.) to determine if just increasing Jill's spontaneous (uncued) responses would lead to her use of the communication board pictures. Random responses touching the pictures were also reinforced. These results are shown in Figure 3. As is evident, Jill did not begin using the communication board pictures until contingencies were placed specifically on that behavior. At that point, she met criterion rapidly.

(Insert Figure 3 about here)

Requesting Through Speech or Sign

A few severely handicapped students will be able to use symbolic responses, such as speech or manual signs to make requests. As with communication boards, this is advantageous because the child can request objects or activities that are not visible in the immediate environment. In addition, both speech and signs increase the child's independence. They do not need to have the pictures present to request the desired item; the appropriate word or sign can be produced at any time.

Case Study #6: Wayne

Wayne was a profoundly retarded 12-year-old who had been taught signs for many years. He typically rehearsed his entire repertoire of manual signs whenever asked "What is this?". For example, he responded by signing "hat, food, help, please" regardless when shown his juice at lunch. As a result, his teachers had been teaching him to sign "drink" at snacktime and lunch with little success. (In 45 trials - nine sessions - Wayne had made 11 correct responses.). Thus, the training procedure designed for Wayne eliminated the opportunity for incorrect perseveration on earlier signs.

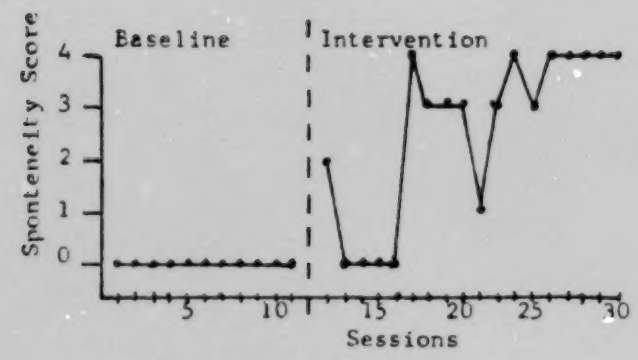

Figure 3. Jill's acquisition of "Requesting through Communication Board." Scoring: (4) spontaneous response without cue; (3) response after question; (2) response following instructions; (1) response following put-through; and (0) resistance to put-through.

In the "Requesting Through Speech or Sign" objective, Wayne was shown the juice, prompted immediately, and then given a taste of juice. Whenever Wayne began producing "drink" independently on any trial, no prompts were given. In addition, each session included two "probe trials" in which no prompt was given. The results of earlier teaching and this training are shown in Figure 4. By the fourth session, Wayne was consistently responding before being prompted during training trials and produced "drink" correctly on most of the probe trials.

(Insert Figure 4 about here)

Training the Child to Initiate Communication

A communication interaction between two persons requires that someone begins the social contact. In order for a child to communicate a request, it is necessary to get the attention of the person to whom the request is addressed. This function of communication becomes even more crucial when the child is severely physically handicapped, and totally dependent on others to meet his or her needs. Furthermore, the ability to initiate communication interactions facilitates the spontaneous use of requesting behaviors (the child does not need to depend on the adult beginning the interaction).

Initiation training in the CCC Program provides those children who do not presently initiate communication with a means to signal the teacher's or parent's attention. In addition, children who initiate interactions in inappropriate means (such as grabbing them, tapping their shoulders, crying, etc.) can be given more acceptable responses to indicate that they want attention.

Case Study #7: James. James was a profoundly retarded physically handicapped child who was nonambulatory with poor fine motor control. He rarely demonstrated interest in his environment, with the exception of some

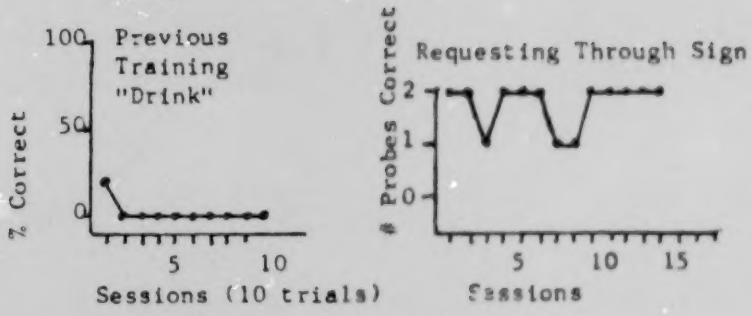

Figure 4. Acquisition of "Requesting through Signs" with Wayne. The left graph shows his results before modifying the program to prevent perseveration on previously-learned signs.

foods. James had been taught to request these preferred foods during "Requesting by Choice" training in which he learned to reach to make a selection. He subsequently used this response to select favorite musical instruments as well.

The next goal was to teach James to initiate communication. The desired objects (food items) were placed behind a screen and the teacher turned away from James for at least 30 seconds. If James vocalized for attention, his teacher immediately turned towards him, praised him, and removed the screen; then James made his selection among the array of foods. If James failed to respond, a second trainer said "James, say 'ah'", which was sufficient to prompt a response from him.

As shown in Figure 5, James rapidly acquired this response. Furthermore, anecdotal reports suggested that the behavior generalized to his home as well. His mother reported that James showed a greater inclination to reach towards objects and interact with his environment.

(Insert Figure 5 about here)

Environmental Manipulations to Facilitate Spontaneous Use

With severely multiply handicapped children, teachers often have the task of creating a need for the child to communicate. In many cases, the student has had a history of communication failure, or has learned that most of his physical needs will be met noncontingently. Even students who have been required to request their wants and needs may remain largely dependent upon the training situations to signal the communicative response.

However, the ultimate goal of any language training is the spontaneous use of functional communicative responses to request wants and needs. Communicative behaviors must be used spontaneously in all appropriate situations throughout the day.

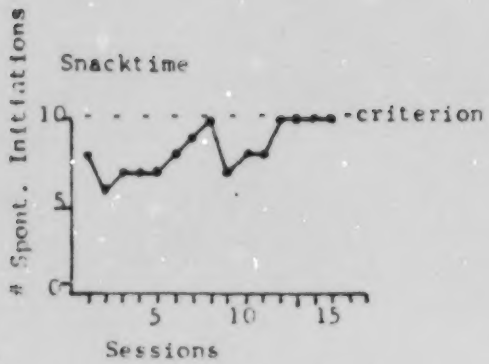

Figure 5. The results of "Initiation Training" with James.

This objective requires that certain features of a child's daily environment be changed in a way which creates a communicative need. A reinforcer is identified in an activity or event which occurs regularly in the classroom. Then the child's access to the reinforcer is delayed or altered by some manipulation of the sequence of events. The student learns to recognize a communicative need whenever it arises, initiate a communicative interaction, and request the reinforcer.

Case Study #7: Molly.

Molly was a severely retarded adolescent who had received years of manual sign training. She had an expressive sign vocabulary of approximately 50 words. Despite these language behaviors, Molly had no functional communication skills; she used none of her signs unless given specific cues by her teachers.

The first intervention selected for Molly was to teach her to spontaneously request assistance during her meals. Sometimes items were left off lunch trays or containers were difficult to open. Typically, Molly responded to this situation by waiting without eating until someone noticed her predicament and helped her. Teaching her to use her language skills independently involved an environmental manipulation and teaching procedure designed to teach her to request items and initiate interactions.

The environmental manipulation involved deliberately withholding Molly's spoon from her tray about two or three times a week. The teaching procedure required her teachers to wait at least one minute for Molly to recognize her need (that the spoon was missing), initiate interaction, and request the spoon. At the end of one minute, she was prompted to respond.

Training involved two phases, as shown in Figure 6. Phase 1 taught her to request her spoon when her teachers attended to her. That is, the teachers looked at her and waited for her to respond. In this situation, Molly did not need to initiate interactions because someone was already attending to her. Phase 2 involved teaching her to attract the attention of her teachers by raising her hand and vocalizing. As shown in Figure 7, she learned to wait for the prompt from another teacher before initiating the interaction. Thus, the teachers stopped prompting her; they simply waited until she made some attempt to attract attention. Then she was told to raise her hand and vocalize.

This procedure resulted in a functional sequence of behaviors with which Molly could solve problems in her natural environment. On those occasions when items were missing from her tray, she raised her hand and vocalized. Her teachers responded by asking "What is it?", or coming over to her. She signed "spoon" and they got her a spoon.

(Insert Figure 6 about here)

The next step for Molly is to generalize this sequence to other problems, such as when her coat is missing, when she needs help with items, etc. Her teachers have reported generalization to novel situations and environments. Nonetheless, specific programming of generalization is essential.

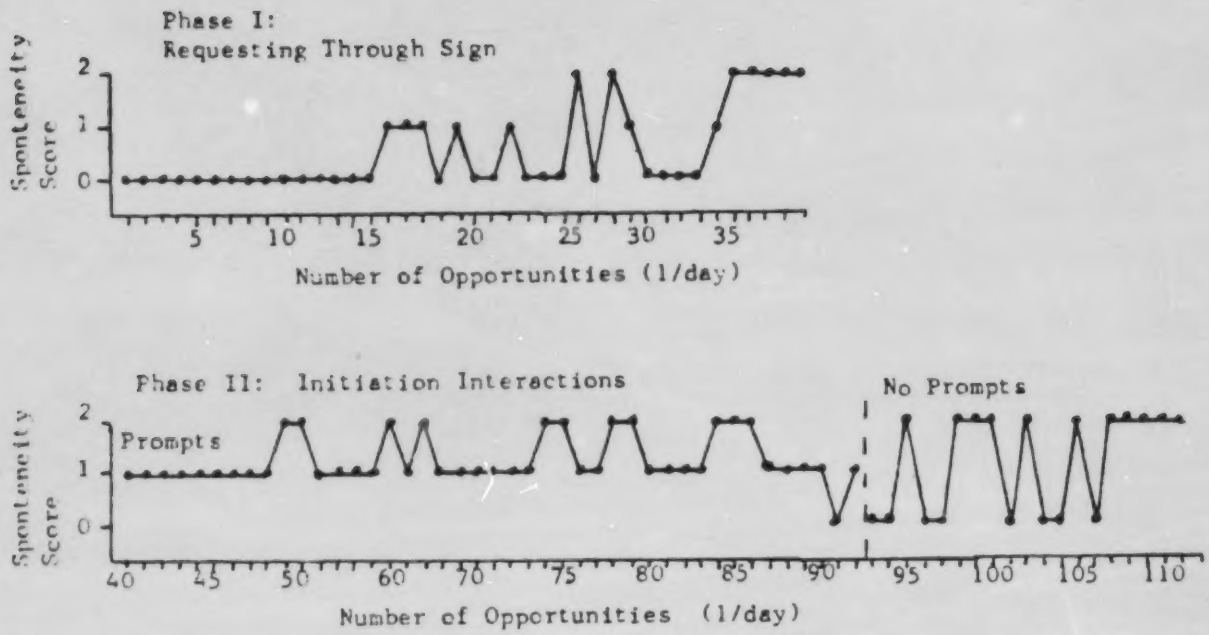

Figure 6. Molly's responses during "Environmental Manipulations to Teach Spontaneous Use." The upper graph shows her data on requesting through signs in the lunchroom, and the lower graph reflects her "Initiation" data in the same situation. Requests and initiation responses were scored: (2) spontaneous responses, (1) prompted responses, and (0) did not respond to prompt.

SUMMARY

The ultimate goal of communication training with severely retarded children is to develop spontaneous responses that they can use to meet their needs. It requires years of intensive work at school and at home for many severely multiply handicapped children to acquire complex communication skills. Thus, their immediate needs must be fulfilled by programming that begins with responses that they can produce. Only when students have some means to request items or activities and to attract attention (initiate interactions), can more complex response development begin. The five objectives of the CCC Program effectively initiate training towards this primary goal.

Communication Curriculum Products

Curriculum Manuals

Klein, M.D., Wulz, S.V., Hall, M.K., Waldo, L.J., Carpenter, S.J., Lathan, D.A., Myers, S.P., Fox, T., & Marshal, A.M. The Comprehensive Communication Curriculum Guide. Early Childhood Institute Document Reprint Service, University of Kansas, Lawrence, KS 66045. 147 pages. $6.00.

> The Curriculum Guide is a complete, detailed description of the training programs and how to implement them with severely retarded and multiply handicapped students. Included in the CCC Guide are (1) an introduction and overview describing the key assumptions of the curriculum; (2) an assessment tool, the Caregiver Interview; (3) three procedures for the Identification of Wants and Needs (reinforcers); (4) goals, rationales, and procedures for the three Request Training Objectives; (5) goal, rationale, and descriptions of procedures to teach children to Initiate Communication, and (6) goal, rationale, and procedures for establishing Environmental Manipulations to Facilitate Spontaneous Use. The Appendices include procedures for "facilitator training", blank data sheets, copies of the Caregiver Interview for duplication, information regarding the selection and development of communication boards, and information regarding the selection of a primary communication mode for severely handicapped students. A brief overview on methods for developing responses was also included.

Waldo, L., Riggs, P., Davaz, K., Hirsch, M., Eye, R., & Marshall, A.M. Functional Communication Board Training for the Severely Multiply Handicapped. Submitted to the Early Childhood Institute, University of Kansas, Lawrence, KS 66045 for dissemination.

> This total communication training manual is an adaptation of Guess, Sailor, and Baer's Functional Speech and Language Training for the Severely Handicapped manuals (1976). It represents a revision of an earlier edition of this adapted program. This manual includes the early training steps for initiating language training using communication boards. It includes programs and data sheets.

Waldo, L., Riggs, P, Davaz, K., Hirsch, M., Eye, R., & Marshall, A.M. Functional Signing Training for the Severely Multiply Handicapped. Submitted to the Early Childhood Institute, University of Kansas, Lawrence, KS 66045 for dissemination.

> This total communication training manual is an adaptation of Guess, Sailor, and Baer's Functional Speech and Language Training for the Severely Handicapped manuals (1976). It represents a revision of an earlier edition of this adapted program. This manual includes the early training steps for initiating language training using manual signs and speech. It includes programs and data sheets.

Waldo, L., Barnes, K. & Berry, G. Total Communication Checklist and Assessment. Submitted to the Early Childhood Institute, University of Kansas, Lawrence, KS 66045 for dissemination.

This is an extensive guide to making decisions for mode selection with severely handicapped students. It was written by a speech pathologist, occupational therapist, and audiologist to provide an interdisciplinary approach to targetting appropriate communication responses for multiply handicapped students.

Videotapes

The Comprehensive Communication Curriculum Videotape. Media Services, Bureau of Child Research, 2601 Gabriel, Parsons, KS 67357. Full color 20 minutes available in 3 4 inch cassette, ½" reel-to-reel (black and white), VHS xn (color) and BETAMAX (color). 20 minutes. $25.00 for 2-week rental; $50.00 for purchase.

The twenty minute videotape was designed to acquaint parents and special educators with the key assumptions of the Comprehensive Communication Curriculum, and to familiarize them with the basic training objectives and procedures. It illustrates each point with a full-color situation involving students trained in the CCC curriculum.

Professional Articles

Wulz, S.V., Klein, M.D., Waldo, L.J., & Hall, M.K. The Comprehensive Communication Curriculum: A program for severely multiply handicapped students. Journal of the Association for the Severely Handicapped, in submission, 1981.

This is an article that describes the curriculum for special educators and other people involved in furthering the communication abilities of severely and multiply handicapped children. It provides a case study with data to illustrate each program component.

Wulz, S.V. & Marshall, A.M. An analysis of the development of spontaneous language use by modelling. Journal of Applied Behavioral Analysis, in submission, 1981.

The effectiveness of modelling procedures for increasing the frequency of target phrases was assessed with four severely retarded subjects. A multiple baseline design with reversal was used to analyze the role of modelling in eliciting responses. The results indicate that (1) modelling effectively increased the frequency of all target phrases, (2) all subjects generalized to new combinations of the target phrases, and (3) none of the subjects produced the control phrase or any combination of it throughout the study. These results are important because modelling is a simple, unobtrusive procedure that can be used in any setting and during other training and recreational activities. It is especially advantageous in a home or institutional setting where the staff and parents are often too busy to concentrate on one particular skill.

Wulz, S.V. Developing generalized spontaneous responses using an unobtrusive training technique. Journal of Applied Behavioral Analysis, in submission, 1981.

A multiple baseline across subjects with with-in subject reversals was used to evaluate the effectiveness of an instructional prompt to elicit a trained response in a novel setting. The subjects were six severely retarded boys who used manual signs for primary communication. The results indicated that (1) an instructional prompt elicited the trained response in a novel setting, (2) responses became spontaneous (independent of the instructional prompts), and (3) subjects produced novel response combinations. In addition, informal observation and anecdotal information suggested that some of the subjects generalized to other environments and people, and to new situations. This procedure is especially useful because it requires minimal training or effort by people in noninstructional settings.

FAMILY INVOLVEMENT COMPONENT

PROGRAM OVERVIEW

The design and implementation of quality education is the goal of all individuals working with the severely multiply handicapped student. While no educational system can be a panacea for the severely handicapped student, it is, in all probability, the most significant experience in the student's life. Essential to complete and cohesive education are coordinated team efforts and inter-disciplinary sharing of information and resources. By necessity, utilization of all resources, has become a standard requirement. The purpose of the CCC Program is to guide teachers in the utilization of a very important resource, the student's family.

Advantages of Family Involvement

There are four advantages of involving family members in the education of the handicapped child. Perhaps the most important of these is assessment. Teachers of severely handicapped students are often at a disadvantage when trying to assess the handicapped child's skill level. While non-handicapped students are often expected to possess prequisite skills, very rarely does the special educator "know what to expect" when working with new students. An underlying assumption of the CCC Program is that in many situations no one knows the child as well as the parents, or the primary caregiver. As a result, teachers are encouraged to include parents in all assessments. Other advantages of family involvement include assisting teachers with classroom programming, and activities. Parents may often assist with efforts to maintain and generalize classroom training effects by programming at home or serving as an additional trainer in the classroom. Parents may assist with graphing, regular paper work, or may serve as assistants for outings and parties. A

final advantage is that parents may act as advocates for the school and/or classroom. The manual invites teachers, administrators and parents to work cooperatively with each other as opposed to against each other.

Planning Strategies for Teachers

While many parents eagerly accept the opportunity to be involved in their child's education, others may be very reluctant and openly resistant to such efforts. To assist in involving these parents, teachers are encouraged to attend to the special needs of parents with handicapped. children. In all too many cases parents of handicapped children have been pictured as being "somewhat neurotic". Behavior leading to this opinion may range from being disinterested to zealousness. Olshansky (1962) on the other hand, refers to these behaviors as manifestations of "chronic sorrow". Chronic sorrow is described as a pervasive psychological reaction of continuing sorrow. Olshansky points out that parent behaviors which are often labeled as neurotic, are a "... natural and understandable response to a tragic fact", (p. 133), i.e., the tragic fact of the child's handicap which must be dealt with day after day. Kozloff (1979), in his chapter titled "The Career of Families of Children with Learning and Behavior Problems", provides a very informative analysis of a number of special problems facing the family of a handicapped child. The assumption made by the CCC Program is that teachers will be able to work more cooperatively with parents if they understand some of the difficulties encountered by many parents of handicapped children.

The strategies suggested for implementation of the program may be best perceived as consisting of two phases, each separated by the IEP meeting. The first phase is concerned with initiating strategies, and the second with continuing and increasing individual degrees of involvement. Initiating

strategies discussed are: an initial contact letter, follow-up telephone calls, initial parent group meeting, and a parent-teacher assessment meeting. Following the IEP strategies for continued involvement are implemented. Generally very little involvement of the parents occurs following the IEP. This may be due to many variables, i.e., parents may seem to be unwilling to participate in activities offered by teachers and/or school districts. The CCC Model Program suggests that this situation may be more usefully perceived as a lack of parent readiness to be involved rather than a lack of willingness. Depending upon any given parent's current situation, and upon their past experiences of frustration with various agencies, institutions, and/or professionals, parents may simply be unable to participate to any great extent in their child's educational processes.

Kroth (1979) suggests that parental readiness to participate can be viewed along a continuum of services which may be offered or encouraged by the classroom teacher. Figure 7 illustrates the hierarchy of services, which is an adaptation of Kroth's Mirror Model. As can be seen from this figure, there are certain activities and services which the teacher can expect all parents to be involved in. These services include information on special education, handouts, and announcements. At the next level of involvement are services in which many, but not all, parents are likely to be involved. For example, it is anticipated that most parents will attend the initial group meeting and will be involved in daily communication with the teacher. At the third and fourth levels of involvement are activities in which some and a few parents are likely to participate.

(Insert Figure 7 about here)

FEW	STATE PARENT GROUP
	ACTIVE COMMUNITY INVOLVEMENT
	LEADERSHIP IN AUTONOMOUS PARENT GROUP
	REFERRALS OUTSIDE SCHOOL DISTRICT
	PARENTS TRAINING OTHER PARENTS
	NONTRADITIONAL VOLUNTEERING IN THE CLASSROOM
MOST	JOINING SUPPORT OR RESOURCE ORGANIZATIONS
	WORKSHOPS
	INSERVICES FOR PARENTS
	TRADITIONAL VOLUNTEERING IN THE CLASSROOM
MANY	PARENT GROUP
	SOCIAL ENGAGEMENTS
	RECIPE APPROACH
	CLASSROOM OBSERVATION
	INITIAL HOME VISIT
	DAILY COMMUNICATION
	INITIAL GROUP MEETING
ALL	PERIODIC COMMUNICATION
	ANNOUNCEMENTS
	HANDOUTS ON RESOURCE INFORMATION
	INFORMATION ON SPECIAL EDUCATION SERVICES

Figure 7: Hierarchy of Services for Parental Participation in the Education of Their Child.

Additional Concerns

The CCC Program emphasizes to the teacher the importance of involving the handicapped student's entire family in the educational process. Unfortunately in our present social system it is frequently the case that family involvement is equated with "mother involvement". Generally it is the mother who bears primary or direct responsibility for child rearing. When extra services are needed for a handicapped child, the mother is usually the one to accept the additional responsibilities. While teachers are not in a position to change existing social norms, it might be possible to be influential by emphasizing the importance of total family involvement. The involvement of the entire family will certainly relieve some of the pressure which is typically placed upon the mother of the handicapped child. In a situation where mother and handicapped child are isolated from the rest of the family, a re-distribution of mother's time may have very positive effects on the entire family.

An important and possibly long range goal of the family involvement program is parent autonomy, which is defined as parents becoming independent of teacher support while remaining actively involved in their child's educational program. This does not imply that teachers are to be excluded from parent meetings or other interactional activities. It does however, indicate that parents learn to take the responsibility involved in planning, setting up, and running group meetings. Eventually parents are expected to take the initiative in requesting additional services from teachers and/or the school district, and monitoring their child's educational program.

Final Notes

The family involvement component of the CCC Program has been designed

for use by teachers and parents in rural as well as urban areas. The manuals, however, have been written with the assumption that the students reside with their families and that these families have easy access to the classroom (i.e., the school is across town or within 20 miles of home). The assumption of easy access and/or proximity is responsible for the emphasis on individual meetings, classroom observation, home visits, and parent group meetings. While these activities are facilitated by proximity, they can be utilized on a limited basis even when families are at great distances from the school.

The manuals have been written as flexible guides and implementation of the program should meet the varied needs and demands of individual classrooms, teachers, and families. While involving families not in proximity to the classroom may demand extra work and time, it is suggested that these families may be in greater need. It is possible that extended efforts to reach these families will result in their becoming more interested, and consequently more willing to participate in their child's education.

Family Involvement Products

Manuals

Myers, S.P. Welch, P., Klein, M.D., Waldo, L.J., and Marshall, A.M. Teacher's Guide to Family Involvement. Early Childhood Institute Document Reprint Service, University of Kansas, Lawrence, KS 66045. 48 pages. $3.00.

The teachers guide has been designed to provide a structure from which teachers may assess, and later increase family involvement in the educational process of the handicapped child. The manual is divided into three sections. The first section discusses the advantages of family involvement, the second planning strategies, and finally, some additional concerns dealing with autonomous parent groups and involvement of the entire family. The manual is designed in a step by step fashion and consists of many suggestions and examples for implementation.

Basically four advantages to family involvement are discussed. These include assessment concerns, parents providing assistance with programming in school and at home, suggestions for classroom activities, and advocacy. The second section of the manual deals with planning strategies for implementation of the program. Implementation has been divided into two phases, separated by the IEP. During the initial stage of implementaion activities such as the initial contact letter, a follow-up telephone call, initial group meeting, and the caregiver interview are discussed. Continued involvement consists of a discussion of the Hierarchy of Services (Figure 7), an overview, outline, and utilization strategies are included. The final section of the manual consists of a discussion of total family involvement, and parent group autonomy. The manual also consists of a number of Appendixes which provide sample initial contact letters, information sharing suggestions, and daily communication reports forms to be used by teachers in information sharing with parents.

Klein, M.D., Myers, S.P., Hogue, B., Waldo, L.J., Marshall, A.M. and Hall, M.K. Parent's Guide: Classroom Involvement, Communication Training, and Resources. Early Childhood Institute Document Reprint Service, University of Kansas, Lawrence, KS 66045, 91 pages. $5.00.

The parent's guide is divided into three sections: classroom involvement, communication training guidelines, and a resource guide. The section dealing with classroom involvement is essentially a condensed version of the teacher's guide described above. It contains discussions of the advantages of parental involvement, special concerns for parents, implementation strategies, and total family involvement, and parent group autonomy.

The communication training section of the parent's guide is designed to accompany the Comprehensive Communication Curriculum Guide, which is a teacher's guide, and is the third manual produced by the CCC Program. The communication section of the parent's guide presents five basic assumptions concerning communication training and describes in detail the following components of the CCC Guide.

- Assessment: Caregiver Interview
- Identifying and Developing Wants and Needs
- Requesting More
- Requesting Through Choice
- Requesting Through Symbols
- Training Children to Initiate Interactions

In addition the communication section discusses developing communication skills in the home. The strategies suggested for home training evolve around meal, bath, and play times. The information presented to parents stresses that learning to communicate is more important than learning words, and that communication training opportunities exist throughout the day for all children. The communication section of the manual is illustrated and provides examples of each of the communication objectives.

The resource guide provides alphabetical listing of over 250 national and state (Kansas) resources. Private and Public service providers and information resources are included. To assist parents in locating appropriate services or information the manual provides a cross index with 43 topic areas. These topic areas are listed in Table 1.

Table 1: Cross Index of Reference Topics for Parent Guide

ACRONYMS	DEAF (See Hearing Impaired)	KANSAS	OSTOMY
AGENCIES	DIABETES	KIDNEY IMPAIRED	PARENT INFORMATION
ALLERGIES	DOWN'S SYNDROME	LEARNING DISABILITIES	PHYSICALLY IMPAIRED
ARCHITECTURAL ACCESIBILITY	EDUCATION	LEGAL	RECREATION
ARTS	EDUCATION	LIBRARY	RESIDENTIAL
AUTISM	EPILEPSY	MENTAL RETARDATION	RESIDENTIAL FACILITIES-KANSAS
BLIND	GENERAL INFORMATION	MULTIPLE SCLEROSIS	RESPITE CARE
BLIND-DEAF	GIFTED	MUSCULAR DYSTROPHY	SPEECH
CEREBRAL PALSY	HEARING IMPAIRED	NEWSLETTERS	SPINA BIFIDA
COUNSELING SERVICES	HEMOPHILIA	OCCUPATIONAL THERAPY	TRISOMY 18/13
CYSTIC FIBROSIS	HOTLINES		VOCATION

Professional Articles.

Wulz, S.V., Hall, M.K., Klein, M.D., and Myers, S.P. A home-centered Instructional Communication Strategy for Severely Handicapped Children. Journal of Speech and Hearing Disorders, in submission, 1981.

Family involvement is an essential element of language intervention with severely handicapped children for several reasons. First, the parent-child interaction is the focus of normal language development, and can be a powerful impetus in language learning for handicapped children. Second, limited generalization and maintenance of skills often occur when they are acquired in environments that do not also teach the appropriate use of skills. Third, parents can be successful intervention agents and may generalize their skills to other interactions with their child.

Training conducted in the home must be compatible with that environment: it should involve only those skills that are of immediate use in the home. The Instructional Communication Strategy described herein represents such a program. It is a synthesis of training strategies used with normal and handicapped children, and is applicable regardless of child's level of functioning, age, or handicapping conditions.

This training model involves considerable modification in the role of speech-language pathologists dealing with the severely handicapped. The professional's skills are best utilized for assessment, program development, monitoring progress, and training specialized skills. The parents provide most of the direct training. Thus, both parents and professionals are utilized for their maximum benefit to the child.

Wulz, S.V., Myers, S.P., Klein, M.D., and Waldo, L.J. Unobtrusive Training: A home-centered model for communication training. Journal of the Association of the Severely Handicapped, in submission, 1981.

This paper discusses a home centered communcation training model for severely-multiply handicapped students. This model introduces an "unobtrusive training" strategy which utilizes parents as primary intervention agents. For training to be unobtrusive it must be functional in terms of the training context, responses trained, and reinforcers selected. In addition, training must be natural to the home environment, and responses must be easy to teach.

Three types of unobtrusive training have been identified, and are discussed. These consist of an exposure technique, incidental teaching, and reinforcement of spontaneously occuring responses. Finally, advantages of unobtrusive home training are outlined. Specifically these include simplicity, normality, and adaptability. The unobtrusive approach to communication training is viewed as having distinct advantages over other models in terms of increasing the probability of generalization, maintenance, and spontaneous use of communication skills.

APPENDICES

Appendix A: CCC Model Development

The CCC Curriculum and Family Involvement components were the culmination of a two-year development and evaluation period. Six sources of input and information were critical to its development: (1) an extensive review of the language training literature; (2) intensive interactions with teachers in three severely multiply handicapped classrooms; (3) intensive interaction and consultation with the parents of children in the three development classrooms; (4) feedback from the advisory council; (5) input from paid resource people, and (6) professional feedback on the manuals' format and clarity.

Literature Review

The purpose of the extensive literature review was to identify existing programs for language and parent training to evaluate their usefulness for students who were severely and multiply impaired. Another objective of the literature review was to identify issues relevant and training, especially the underlying assumptions of the programs, program planning strategies, decision making process; and selection of programs appropriate to students.

In the process it was discovered that there were several gaps in the existing language training literature. First, nonspeech training methods have not been well-identified, evaluated, or described. Second, the existing programs failed to provide methods of adapting to the individual student's particular limitations or strengths; that is, the programs did not adapt well to individual differences. Third, the functionality of training was often limited.

Review of the parent and family involvement literature indicated that on the basis of this extensive literature review, we developed some underlying assumptions for the CCC Program: (see page 4 Curriculum Guide).

Interactions with Teachers and Students

There were three classrooms included in the development process. Two of the classrooms were in the local school district and one classroom was located at Kansas Neurological Institute, a state institution for retarded children. A total of twenty-six students were involved in these classes along with three teachers and nine paraprofessionals. The students ranged in age from five to twenty-two (average age 13-8). Most of the students were severely or profoundly retarded, one student was moderately retarded with severe physical impairments. The students had physical and/or sensoryimpairments as well as developmental retardation.

One CCC professional was assigned to each classroom with two purposes. The first function was to consult and provide input to the classroom teacher and paraprofessionals when requested. This included assisting in developing programs, monitoring, and/or interpretation of data. The second function of the consultant was to observe the classroom to determine what the general activities in the classroom were, how the students used language, how the teachers responded to that language, and what the needs of the teachers and students were.

In a meeting once a week, the consultants met and discussed the results of their data collection and observations. They worked together on the development of a cohesive curriculum that would meet the needs of all three classrooms.

Interactions with Parents

The parents of the public school classroom students were intensively involved in the development of the CCC Curriculum. They met with the parent trainer and parent consultant once a week and discussed issues of interest or concern

to them. Among those issues that the parents were interested in were the legal rights to education, the IEP process, and communication programming. Thus, these topics were presented to the parents in the parent groups and then included in the manual after the parents' feedback was obtained.

An inservice for communication programming was also given. Following the inservice parents, in cooperation with the parent trainer, designed programs that were compatible with their usual schedule at home ("unobtrusive training"). Their input and feedback was critical to the development of both the CCC Curriculum and Family Involvement Components.

Input from Paid Resource People

These processes of collecting direct experience with the needs of classroom teachers and parents of severely multiply handicapped students were supplemented by input from other professionals. The CCC Project was fortunate to have national experts on language training with retarded children at the University of Kansas.

Doug Guess, Ed.D. of the University of Kansas Department of Special Education presented a workshop to the CCC Model Program staff entitled "The Use of Functional Curriculum Sequencing Strategy to Teach Speech and Language Skills to Severely Handicapped Students". Among the topics discussed were the utility of massed versus spaced training trials on generalization, maintenance, and spontaneous use of language skills, methods of incorporating training into ongoing activities, and methods of intermixing training goals within a single training session. These issues were applied directly to observations that the staff had made in their consultation classrooms.

Ann Rogers-Warren, Ph.D. of the University of Kansas' Early Childhood Institute is an expert in "milieu training" or methods of adapting the

environment to facilitate language use and development. Furthermore, her extensive experience with this population was an asset in applying her current research to severely multiply handicapped students. She provided direct feedback on the procedures and concepts developed by the CCC Model Program staff. She offered ideas on incorporating communication stimulation into the language training session or groups, methods of assessing social validation, and considerations for measurement of language behaviors from teachers and students. This visit and her input resulted in a number of revisions in the CCC Model Program process.

Tom M. Longhurst, Ph.D., Associate Professor at the Kansas State University provided feedback and recommendation regarding an assessment instrument (the Total Communication Checklist Assessment, for selecting a primary communication mode for severely retarded subjects.) This feedback was used to modify the format and presentation of the instrument, although its validity was unaffected.

Advisory Council Feedback

On the basis of the observations and consultation with teachers, students, and parents, an extensive literature review, and input from other experts in related fields, the CCC Curriculum Manual (First Draft) was written. This draft of the manual was sent to the replication classrooms (see the following section) and members of the advisory council. On the basis of the feedback of teachers, parents, and the advisory council, the revised or final version of the manual was written.

Advisory Council members included Ann Rogers-Warren (University of Kansas), Doug Guess (University of Kansas), Dennis Keeling (Norton State Hospital, Director of Speech and Hearing), Dr. Pamela Landon (University of Tennessee School of Social Work), Ron Pasmore (Director of Speech and Hearing, Winfield

State Hospital), Karen Teska (Mother of a severely multiply handicapped child), Ann Turnbull (parenting specialist, Bureau of Child Research, University of Kansas), Mary Ann Keeting (Speech Pathologist, Capper Foundation for Crippled Children), Tom Longhurst (Professor of Speech Pathology, Kansas State University), Perrin Riggs (teacher, U.S.D. 501), Rhonda Eye (Outreach Specialist, Kansas State Department of Education). In addition, Donna Mirkes and Greg Owen from the Project Development Assistance System reviewed the products for formatting consistency.

Appendix B: CCC Model Replication

Description of Replication Process

Replication activities for this program can be divided roughly into three phases; planning, intervention, and follow-up. Planning occurred during the last half of year two, with intervention and follow-up occurring during year three.

Planning.

Planning activities during the replication phase of the project centered on identifying public school programs that were eager to use the model and that were judged by our staff as having a good prognosis for successful replication. Prognosis for replication was estimated across the following variables: local leadership and teacher support of the program, management lines between administration and teachers clearly defined and cooperative, local district's capacity to accept change, and teacher competency.

The process used to identify and select replication school programs is listed below.

Step 1: Introductory packet mailed to all Kansas special education administrators having programs for severely multiply handicapped students.

Step 2: Follow-up phone calls and letters to identify programs interested in replication.

Step 3: Program materials and tentative interagency interaction agreements distributed to interested programs.

Step 4: Interagency interaction agreements finalized through negotiations and signed by all parties involved.

Figure 1 is a copy of an interaction agreement from one of the school districts serving as a "distant" replication site. Each district's agreement read

Insert Figure 1 about here

differently depending on the replication strategy involved (see next section "Intervention") and the specific negotiations made to finalize the agreement.

As a result of this planning process, nine public school programs signed interagency interaction agreements, consenting to replicate parts or all of the model. Additionally, four classrooms at Kansas Neurological Institute were identified as replication programs. Figure 2 describes the replication sites.

Insert Figure 2 about here

All students served in the replication classrooms were of school age (3 to 20 years of age) and all were severely multiply handicapped. That is, visual, hearing, medical, emotional and/or physical handicaps accompanied the mental retardation in all of the students.

Intervention

The staff of the Model Program and replication classrooms interacted from late August through April of the 1980-81 school term. Three separate intervention strategies were employed during this time (see Figure 3). The classroom in each strategy provided specific replication data useful in revising the model components.

Insert Figure 3 about here

August, 1980

Figure 1:

INTERACTION AGREEMENT BETWEEN

DISTANT SCHOOL DISTRICT AND THE CCC MODEL PROGRAM

August, 1980 through April, 1981

The replication site (i.e., school district) will be responsible for meeting the following objectives.

1. Read and study the curriculum, family involvement, and parent manuals within the first week of school.
2. Use as much of the manuals as you feel comfortable using.
3. Complete the following questionnaires:
    a. Social validation questionnaire twice a year.
    b. Questionnaire on project concepts twice a year.
4. Conduct a weekly meeting between teachers, speech pathologist, and para-professionals to discuss training and replication concerns.
5. Provide the following items when the project staff visits:
    a. Graphs of CCC communication programs.
    b. Written CCC communication programs, if available.
6. Allow the project staff to observe the classroom and meet with the staff while visiting the site.

The CCC project staff will be responsible for meeting the following objectives.

1. Provide copies by the middle of August, 1980, of the curriculum, family involvement and parent manuals for all staff and parents involved.
2. Copy and send all addendums and revisions to the manuals when they are completed.
3. Be available to answer questions over the telephone or by mail.
4. One of the project staff will visit the site at least once during the second semester.
5. Provide copies of the completed manuals.
6. Provide further inservice if funded by the school district or State Department of Special Education.
7. Provide copies of a parental consent form.
8. Insure anonymity of students, parents, teachers, and districts in reports and articles.

Figure 2: description of replication sites

Program	# of Classes	# of Teachers	# of Para-Professionals	# of Speech	# of Students
Public School A	2	2	2	0	7
Public School B	1	1	2	1	3
Public School C	2	2	4	1	3
Public School D	1	1	2	1	3
Public School E	1	1	2	0	3
Public School F	1	1	2	1	5
Public School G	1	1	2	1	12
Public School H	1	1	2	0	3
Public School I	1	1	2	1	7
KNI	4	4	7	0	8
TOTAL	15	15	27	6	46

* This number represents the number of students involved in replication programs. In some cases this number is less than the total number of students in the class.

Figure 3: Intervention strategies during replication

Replication Strategy	Programs Included	Purpose of Replication	Primary Interaction Process Involved
Involved replication with program development	KNI (4 classes)	In depth data collection and consultation to insure program adoption; research/development to resolve programming problems identified during replication.	Daily observation to record training and reliability data; weekly staffings to monitor changes and progress; programs provided directly to classroom staff by model consultants.
Involved replication	3 Public Schools (5 classes)	Monitor program adoption through use of written materials and regular consultation to insure program vailidity.	Weekly/monthly meetings to monitor data and child progress and to staff changes. Occasional classroom observations. Phone calls and letters as needed. Classroom staff moderately independent in designing programs.
Distant replication	6 Public Schools (6 classes)	Monitor program adoption through use of written materials only to measure program replicability.	One meeting during second semester to identify problems; and collect replication data; phone calls and letters as needed; classroom staff completely independent in designing programs.

Follow-up

Replication activities were completed in April, 1981. The follow-up activities included letters of appreciation to teachers and administrators, completion of social validation questionaires by involved and distant site teachers, and dissemination of revised materials.

Examples of Replication Data

The success of program replication was measured in three ways; teacher adoption as indicated by programs designed using the guidelines presented by the CCC Model, child progress, as indicated by criterion performance achieved on CCC programs; and teacher satisfaction with the CCC Model, as indicated by responses on social validation questionnaires.

Data from Involved Replication with Program Development.

Because of the high degree of CCC Consulting interaction in the KNI replication classrooms, only child progress data were collected at this site. Furthermore, because KNI is an institutional setting, the parent component was not replicated in these classes.

Example of Child Progress.

The case study represented below is an example of how the KNI replication classes were used to further verify procedures in the program. Other students' programs at KNI investigated the "More", "Initiations", and "Environmental Manipulations" procedures presented in the Curriculum Guide.

One class' regular snack period was identified as the ideal setting for language training. The students' responses were selected individually based on three criteria. First, the responses should be in the student's potential repertoire (easy to train and/or prompt). Second, the responses should occur at a low rate before training. Third, the responses should be an improvement (more complex or appropriate) over the student's spontaneous "request" behavior

before training. This resulted in three students learning "Requesting by Choice" (RO-touching juice, CH-touching juice, and MI-reaching for juice), three students learning "Requesting by Signs or Speech" (RI-saying "juice", HA-signing "Drink", DE-signing "drink"), and one who learned "Requesting by Communication Boards" (JA-pointing to a picture of juice).

The students were trained during their snack period. They were seated at a table with a pitcher of juice in the middle. Empty cups were set in front of each student. The teacher sat with the students at the table and maintained a posture of attention (looking at the students silently) for one minute.

During baseline, the students were observed for any requesting behavior that might have occurred during the one-minute pause. If any gesture, sign, speech, or motion that communicated "requesting" to the teacher (and reliability observers) occurred at any time during the one minute pause, the student was given the juice immediately. If no requesting behavior occurred, the students were not given any juice. (This represented nondifferential reinforcement for request responses).

During intervention, the students were given juice only if they produced the targetted requesting responses. If they failed to produce the targetted response in the one minute delay period, a series of prompts was employed to elicit the response. Unless a student resisted the prompt, each trial terminated with reinforcement during the intervention phases.

Three trials were maximum each session. However, the purpose of training was to teach independent spontaneous responses; therefore, only the first trial in each session was included in criterion measures (and graphed).

Reliability samples were taken regularly throughout training and ranged from 83% - 100% agreement overall. The average percent agreement was 94%.

The results are shown in Figure 4. As indicated by these data, reinforcement was sufficient to establish the selected response for three of the seven students. These results are very important. First, the reinforcement was nondifferential -- any requesting behavior would have been reinforced. Therefore, these data indicate that the responses selected for the students were appropriate; even nondifferential reinforcement increased the frequency of responses. Second, nondifferential reinforcement increased the responses with very little training effort and no prompting. The pause may be critical to increasing responses when students have them in their repertoire already (see Halle, Marshall, and Spradlin, 1979).

Insert Figure 4 about here

The four other students acquired the targetted responses following intervention. Again, relatively little training time was required to establish these responses (there was a maximum of three trials per session). All students acquired spontaneous responses, although the prompt had to be terminated for HA before he produced the responses completely independently (during the prompt).

Data from Involved Replication.

Program replication was measured through written programs, student progress, and teacher satisfaction at these three sites.

Written Programs. Figure 5 is an example of a program written by a teacher in one of the "involved" replication classrooms. The program is concise and specific. The procedures follow the basic guidelines of the curriculum as it was designed at the time this program was written.

Insert Figure 5 about here

Comparable written programs were designed for most other students at these sites. In addition, teachers at these sites were observed incorporating Curriculum procedures into programs in other domains of the classroom and into

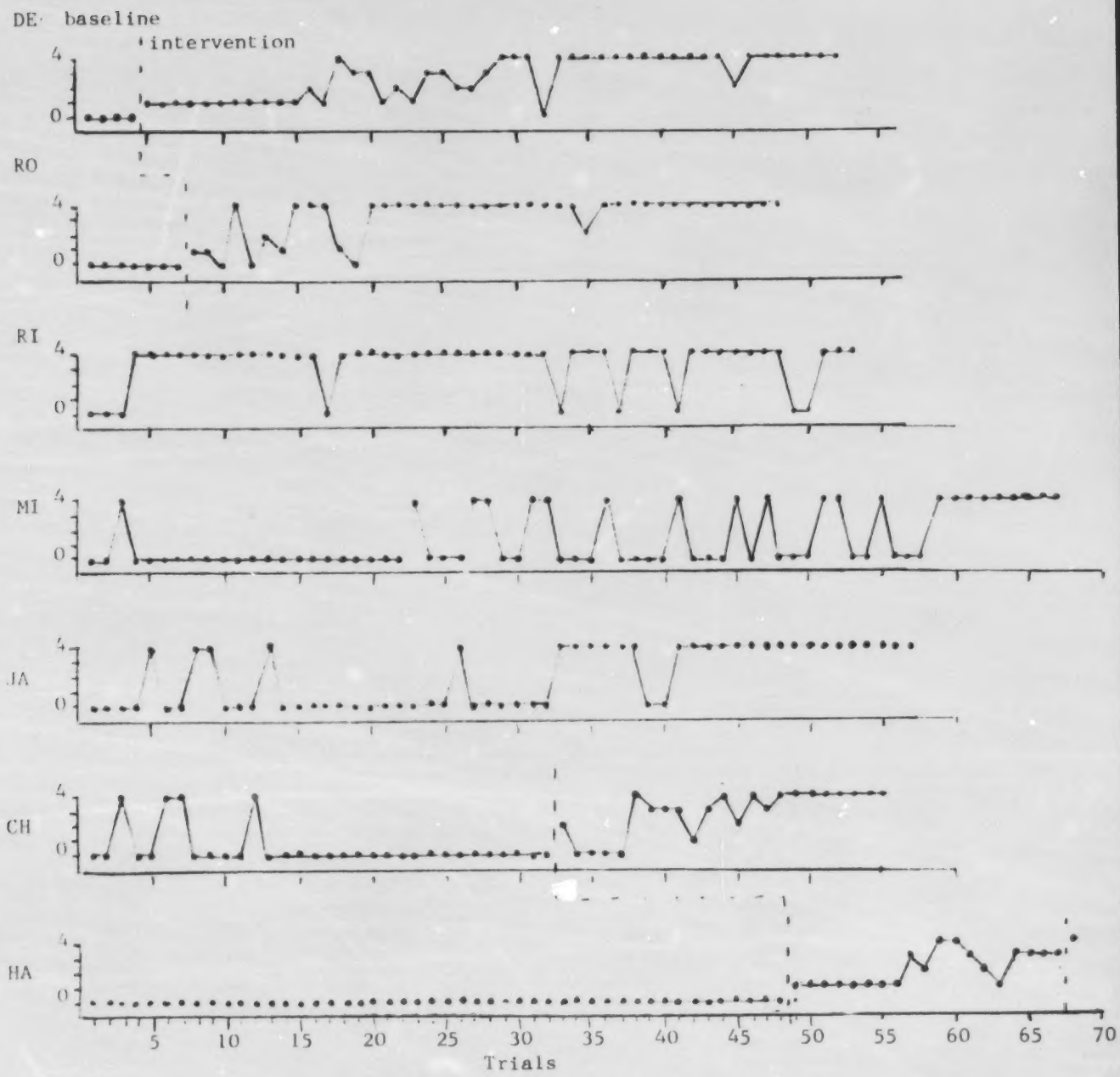

Figure 4. The results of "Request" training conducted with eight students in a group snack setting in an "involved" replication classroom at KNI. Request responses were scored: (4) spontaneous, unprompted responses, (3) responses following a question cue, (2) responses following an instruction cue, (1) responses with physical assistance, and (1) resisted prompt or prompt not given.

Figure 5: Example written program from involved public school replication site.

Objective	Sitting in chair behind screen, student will reach toy when it is presented to him and will hold toy with minimal assistance 90% of the time for 3 consecutive days.
Rationale	Increase attending skills; teach "more" concept; improve motor skills.
Scheduling	10 trials presented 5 days per week
Materials	Small chair, data sheet, pencil, screen, toys
Cue:	"(Name), see toy? Want to play?"
Position	Student will be sitting in a chair, feet touching floor, hands in lap. Student will be behind a screen in a quiet area.
Baseline	Place student in chair, sitting directly opposite trainer; give the cue; record independent reaching of toys; do 10 trials, recording each; run baseline until data is stabilized.
Task Analysis	Step 1: Student in chair, trainer sitting directly in front. Trainer gives command "(Name), see toy? Want to play?". Give student 30 seconds to respond. If no attempt is made, trainer will prompt student by touching hand. If still no response, a complete put-through is used. Step 2: Same as above but student is required to hold toy for an increased length of time. Step 3: Same as above, but screen is removed.
Criterion	Throughout the steps, student must have 90% independent responses in 3 consecutive sessions.
Reinforcement	Praise and playing with the toy.
Next Program	"Choice"

their general interactions with the students during the day.

Child Progress. Figure 6 presents the data for the student taught using the program presented in Figure 4. The student acquired the target response in 12 sessions.

Insert Figure 6 about here

The program data displayed in Figure 6 is representative of the students' progress across all involved sites. Fifty-nine percent of the CCC programs at these sites achieved criterion; 18% were approaching criterion (increasing graphs); 23% were stabilized or decreasing in response rate (percentages based on 30 programs). Therefore, the program was successful with at least 77% of the severely multiply handicapped students.

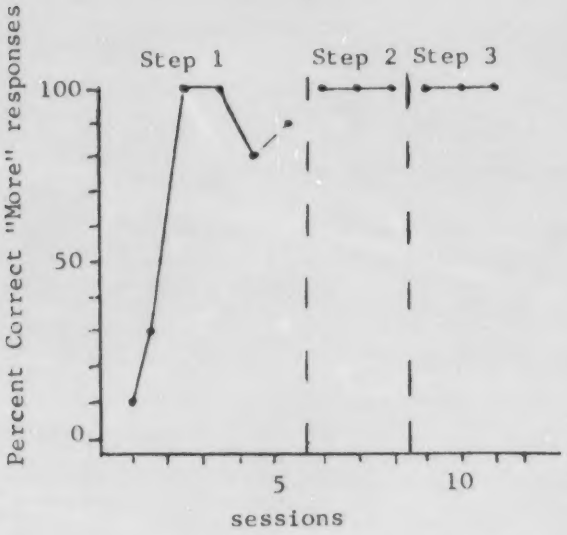

Figure 6. Acquisition of "more" response by a student in an "involved" public school replication classroom.

Teacher Satisfaction. Figure 7 presents in summary form the social validation questionnaire responses from teachers and paraprofessionals in the 5 "involved" replication classrooms. Eleven teachers and paraprofessionals received questionnaires and ten were returned.

Insert Figure 7 about here

Data from these questionnaires indicated the replication teachers found the model effective in terms of child progress and parental enthusiasm for communication. Responses indicated little change in the involvement between parents and teachers as a result of the Model. These data are most likely attributable to the schedule of Model intervention. Model materials were not delivered to the teachers until late August, past the time when several parent involvement activities were to be initiated. All involved site classes, however, requested the amended Model materials and stated they intended to continue to use the Program.

Data from Distant Replication.

Program replication at the "distant" sites produced the same type of data as that discussed for the "involved" sites.

Written Programs. The majority of the distant site teachers showed a high degree of adoption of the Model through use of only the printed materials. Figure 8 is an example program written by a teacher in one of the "distant" classrooms. The program is very complete and adapts the Model procedures as designed.

Insert Figure 8 about here

Figure 7: Social validation responses from "involved" replication sites.

Question	Response
Did the project improve your class and/or programs?	90% Yes
Did the parents demonstrate any change in interest or enthusiasm for communication?	88% Yes
Did Teacher involvement in the home increase?	20% Yes
Did parent involvement increase in the classroom?	12% Yes
How useful were the Communication Curriculum materials?	48% were using comparable procedures before Model intervention 45% started new procedures after Model intervention 8% considered Model intervention not applicable
How useful were the family involvement materials?	51% were using comparable procedures before Model intervention 35% started new procedures after Model intervention 2% will start next year as a result of Model 12% considered Model intervention not applicable.

Figure 8: Example written program from "distant" replication site.

Program Title: "MORE" Program

Author: Teacher Person Responsible: Teacher

Instructional Objective: Given the cue, "(Name), want more banana?" the student will gesture to indicate she would like more banana within 10 seconds of cue for 4 out of 5 trials each session for 3 consecutive training days.

Rationale: This program is designed to teach the student to indicate she wants more when asked. This will help the student interact and express needs and wants to others.

Functional Scheduling: During the scheduled snack time during school day, after student has already been given one bite of banana.

Materials: Peeled and cut banana, pencil, data sheet.

Cue: "(Name), want more banana?"

Data Recording: Use a 5 trial data sheet. During baseline record a (+) if the student gestures within 10 seconds, or a (-) if no response. During training record for each trial a (2) if the student gestures within 10 seconds, (1) if she gestures after prompting, or a (0) if physical guidance is given.

Baseline: Give cue, "(Name), want more banana?" If the student indicates by a gesture she wants more, give a small piece of banana and record a (+) but give no other reinforcement. If response is negative or there is none, record a (-) and give no banana. Run 5 trials each session with 1 session per school day. A trial consists of giving cue and the student either responding or not. Run baseline for at least 3 days, or until data stops fluctuating, but not longer than 7 days.

Training Procedures: Trainer gives cue, "(Name), want more banana?" If the student indicates by a gesture she wants more within 10 seconds, reinforce by giving a piece of banana and social reinforcement as well, such as verbal praise, clapping hands, pats on the back, etc. If the student does not respond with a gesture within 10 seconds give prompting such as modeling or more verbal instructions or encouragement. If the student then responds by a gesture give some banana and social reinforcement as above. If student does not respond within 10 seconds, physically guide him/her in the gesture and give no reinforcement. Begin another trial and continue in this manner until at least 5 trials have been completed during session. Continue training until the student responds to the cue and a gesture within 10 seconds for 4 out of 5 trials for 3 consecutive training days.

Refer to Data Recording section for instructions on recording data.

Figure 8: Continued

Criteria: The student will gesture within 10 seconds of the cue, "(Name), want more banana?" for 4 out of 5 trials each session for 3 consecutive training days.

Graphing: One graph is needed for this program. Along the left-hand side put the Percent Correct. Along the bottom put the Session Number and Date. Along the top put the Program, Student, Trainer, and Reinforcer.

How Reinforcement Will Be Faded: At first reinforce with both banana and social reinforcement each time the student gestures to indicate she wants more. Gradually decrease the social reinforcement to every other time, then every third time. Continue to give the banana each time she responds correctly. Eventually drop the social reinforcement completely with the banana being the only reinforcement.

Next Recommended Program: Another "More" Program using a different activity that the student enjoys.

Child Progress. Figure 9 presents the data for the student taught using the program presented in Figure 8. The student acquired the target response following 17 training sessions.

Insert Figure 9 about here

Graphed data from all of the distant replication sites were not available for summarizing. Narrative reports and review of available graphs and raw data indicated progress results as positive as that from the "involved" sites.

Teacher Satisfaction. Figure 10 presents in summary form the social validation responses from teachers and paraprofessionals in the six "distant" replication classrooms. All 13 questionnaires sent were returned.

Insert Figure 10 about here

Data from these sites were very similar to those from the "involved" sites. However, the "distant" site staff indicated a higher percentage of new procedures used as a result of the Model intervention than did the "involved" staff. All "distant" site classrooms requested the revised Model materials and all plan to use the program next year.

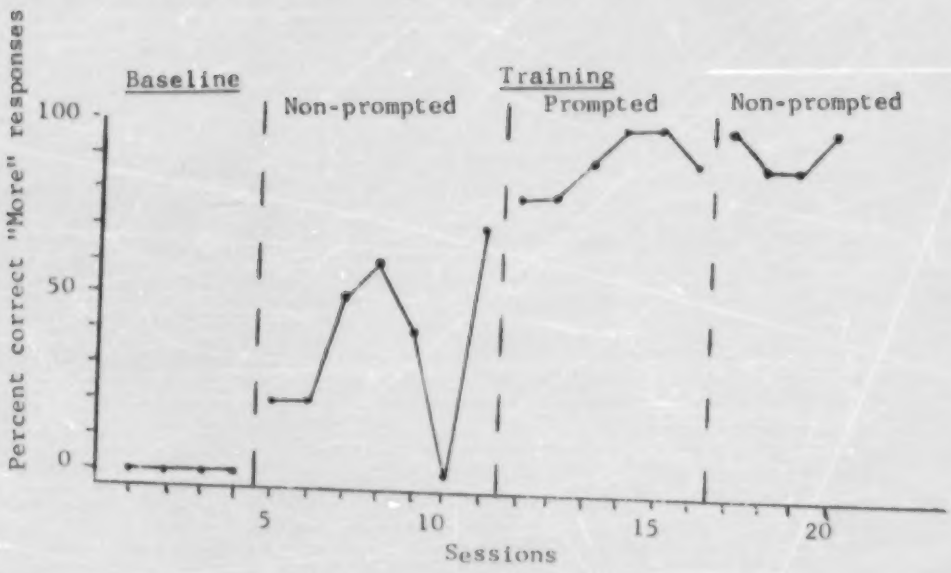

Figure 9. Baseline and training results of a "more" response in a "distant" public school replication site.

Figure 10: Social validation responses from "distant" replication sites

Question	Response
Did the project improve your class and/or programs?	100% Yes
Did the parents demonstrate any change in interest or enthusiasm for communication?	67% Yes
Did teacher involvement in the home increase?	25% Yes
Did parent involvement increase in the classroom?	12% Yes
How useful were the Communication Curriculum materials?	30% Were using comparable procedures before Model intervention. 52% Started new procedures as a result of Model intervention 6% Will start new procedures next year as a result of Model intervention. 11% Considered Model intervention not applicable.
How useful were the family involvement materials?	45% Were using comparable procedures before Model intervention. 31% Started new procedures as a result of Model intervention. 12% Will start new procedures next year as a result of Model intervention. 12% Considered Model intervention not applicable.

Appendix C: Dissemination/Extension

Workshops

April 1981	Classroom programming for communication with the severely handicapped. Kansas State Department of Special Education (Great Bend, KS).
March 1981	The Comprehensive Communication Curriculum. Kansas State Department of Special Education. (Kansas City, KS).
April 1980	A one-day workshop on communication development for SMH students. Kansas State Department of Education (Great Bend, KS).
March 1980	Communication boards: assessment and development. Kansas Department of Education (Wichita, KS).
February 1980	Communication assessment and programming for severely multiply handicapped children. Mountain Plains Regional Center for Handicapped Children (Topeka, KS).
November, 1979	Communication Training with SMH. Mountain Plains Regional Center for Handicapped Children. (Topeka, KS).
March 1979	Nonspeech communication training. Kansas State Department of Education. (Kansas City, KS).
April 1979	Assessment for communication mode selection. University of Kansas. (Lawrence, KS).
December 1979	Interactions between professionals and parents of handicapped children. Kansas State Department of Education. (Kansas City, KS).

Requested Consultations

1981	Capper Foundation for Crippled Children, Topeka. Weekly visits for 4 weeks to assess and design intervention for one autistic-like student.
1980	Great Bend Severely Multiply Handicapped classroom. Two visits - one for assessment and programming and one for home involvement.
1980	Lyons SMH classroom. One visit to design communication board program for a severely multiply handicapped student.

Community Outreach

March 1, 1981 — "Program strives to teach communication to the handicapped" by Vicki Hawver. Topeka Capital-Journal, p. 1.

April, 1981 — "Overview of the CCC Model Program". Presentation to the Kiwanis Club, Topeka, KS.

July, 1980 — Red Cross Handicapped Children's Child Care Training Workshop, Topeka, KS.

Community Groups — Deaf-Blind Task Force, Stephen Myers.
Putty Committee (Citizen group to analyze services to handicapped), Stephen Myers.
Topeka Day Care Association, Stephen Myers.

Presentations

Klein, D., Hall, M.K. and Wulz, S.V. Comprehensive Communication Curriculum for severely multiply impaired. American Speech and Hearing Association, Detroit, 1980.

Hall, M.K. Development of generalized language skills to class and community. The Association of Severely Handicapped, National Conference, Chicago, Ill., 1980.

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Marshall, A.M. Non-speech communication training - Guess, Sailor and Baer. Annual convention of Applied Behavioral Analysis, Dearborn, MI, 1979.

Publications

Manual Availability Announcements

The Association for Severely Handicapped (TASH) Newsletter, Fall, 1981.

SMH Newsletter, Kansas State Department of Education, Fall, 1981.

ERIC Clearinghouse on Handicapped and Gifted Children, submitted August, 1981.

Curriculum Products

(See List A)

Parent Products

(See List B)

Manual Requests

Universities	20
Institutions	9
Teachers	35
Administrators	19
Speech Pathologists	32
Parents	25
Others	6
Total	146
In state	102
Out of state	44

Product Availability

Product	Order from
CCC Guide Parent Guide Teacher Guide TCCA Signing Manual Board Manual	Early Childhood Institute DOCUMENT REPRINT SERVICE University of Kansas. Haworth Hall Lawrence, KS 66045
CCC Video Tape	Media Services Bureau of Child Research 2601 Gabriel Parsons, KS 67357

Appendix D: Reviewed References for Communication Curriculum

Part I: Language Training

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